in a systematic way the very chaotic literature of the subject. It is concluded that the chief structural features of these plants are connected with the transpiring surface and the accumulation of water. As to the transpiring surface, there is a greater or less amount of reduction, supplemented in many cases by features that tend to diminish transpiration, such as protected stomata, aerial water absorption, wax coats, etc. The formation of the water tissue that is so characteristic of succulents seems to be "related to the production of organic acids, owing to the influence of limited gaseous exchange on metabolism, and to the presence of chlorides or sulphates in excess in the soil water." DELF agrees with HOLTERMANN that these considerations do not fully explain succulence, since some plants (as *Salicornia*) are so far modified as to be obligate halophytes, whereas other plants (as *Aster Tripolium*) are facultative halophytes, and still others (as *Suaeda fruticosa*) can endure either saline or non-saline habitats without appreciable structural change. In some cases succulence is a hereditary feature, whereas in others it is related to the conditions experienced by the individual showing it. The author believes that water tissue in all cases is of advantage in allowing a plant to "support a rate of water loss which is very considerable, relative to the transpiring surface."—H. C. COWLES.

The vegetation of Clare Island, Ireland.—A paper by R. L. PRAEGER on the vascular plants of Clare Island is but one of a large series of papers, published as Volume 31 of the Proceedings of the Royal Irish Academy.[15] The total number of papers or parts is 68, thus representing probably the most complete natural history survey ever made of any district in the world. The work has been carried on by more than a hundred specialists. The thoroughness with which the work has been done is well illustrated by the fact that in 18 papers there are recorded nearly 700 species of plants and animals not previously found in Ireland, 60 not previously found in the British Isles, and 17 species that are new to science.

Clare Island is an exposed headland, embracing six square miles, and situated three miles from the mainland. The highest point is 1500 feet above the sea. The number of vascular plants indigenous to the island is under 400. The dominating vegetation type is moorland, which includes practically everything over 200 feet. On the precipitous Croaghmore cliff, 1500 feet high, there is a remarkable alpine colony of 10 species, some of which come down almost to sea-level. There is a detailed and interesting discussion of the origin of the flora. Attention is given to the possibility of a land bridge. Wind and birds are regarded as more important than water as dispersing agents.

[15] PRAEGER, R. L., Phanerogamia and Pteridophyta. Clare Island Survey; a scientific survey of Clare Island, in the county of Mayo, Ireland, and of the adjoining parts of the mainland. Proc. Roy. Irish Acad. 31^{10}: 1–112. *pls.* 6. 1911. The entire series can be secured for 60*s.* from the Secretary, Royal Irish Academy, Dawson St., Dublin.

It is noted that a good deal depends on the efficiency of accidental or occasional dispersal.—H. C. COWLES.

The origin of Monocotyledons by self-adaptation.—A great many years ago HENSLOW proposed the strange theory that Monocotyledons have arisen from Dicotyledons through self-adaptation to an aquatic habitat. Recently he has published[16] further along similar lines; now, however, he regards the notion as a fact instead of a theory, although his line of reasoning is practically unaccepted and is quite out of harmony with the views of modern morphology and ecology. His argument is based on the unsound premise that such formative reactions as those of amphibious plants to water lie at the root of the evolutionary process. No one knows what lies at the root of the evolutionary process, but it is rather certain that it is not this. Water is regarded as causing degeneracy in form and structure, and aquatic seed plants are regarded as degraded land plants. Monocotyledons are supposed to have arisen from Dicotyledons by such degeneracy; non-aquatic Monocotyledons have merely crawled back again upon the land, though retaining their degenerate features. Other authors have regarded Monocotyledons as degenerate Dicotyledons, but self-adaptation as a cause of degeneracy has rarely been postulated; indeed the two ideas, self-adaptation and degeneracy, to the reviewer seem mutually contradictory. A form that is plastic and becomes suited to its environment should not be called degenerate, even though certain organs are reduced or even lost.—H. C. COWLES.

Anatomy of the node.—SINNOTT[17] has concluded that the anatomy of the node may be of great service in indicating the relationships of angiosperms. He considers the "trilacunar" type of node as probably the most ancient available type, meaning that there is a foliar supply of three bundles, each causing a gap of its own in the stem cylinder. This type is characteristic of the Amentiferae, and is present in the majority of Ranales and Rosales. Derived by reduction from this type, as indicated by the study of transitional families, is the "unilacunar" type, characteristic of all the Centrospermae and also of numerous families of the Archichlamydeae and Sympetalae. There is also a "multilacunar" type, derived by the "amplification" of the primitive trilacunar type, which reaches its highest development in Polygonales and Umbellales.

In developing the facts, SINNOTT has examined about 400 genera, distributed among 36 orders, and gives a list of families with their number of nodal

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[16] HENSLOW, G., The origin of Monocotyledons from Dicotyledons through self-adaptation to a moist or aquatic habit. Ann. Botany **25**:717–744. 1911; see also Jour. Roy. Hort. Soc. **37**:88–94, 289–294. 1911.

[17] SINNOTT, E. W., Investigations on the phylogeny of angiosperms. I. The anatomy of the node as an aid in the classsification of angiosperms. Amer. Jour. Bot. 1:303–322. *pls. 30–35.* 1914.